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WEED, C. M.—The Cultivation of Specimens for Biological Study. Concord, 1895. From the author.

WHITMAN, C. O.—Bonnet's Theory of Evolution—A System of Negations; Evolution and Epigenesis; The Palingenesia and the German Doctrine of Bonnet. Lectures delivered at Wood's Holl, 1894. From the author.

WOOD, H.—Has Mental Healing a Valid Scientific and Religious Basis? Boston, 1895. From the author.

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## General Notes.

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### PETROGRAPHY.<sup>1</sup>

**The Origin of Adinoles.**—Hutchings<sup>2</sup> has discovered a contact rock at the Whin Sill, England, which, in the author's opinion, represents an intermediate stage in the production of an adinole from a fragmental rock. It contains corroded clastic grains of quartz and feldspar in an isotropic base containing newly crystallized grains of quartz and feldspar. The isotropic material is derived from the clastic grains by the processes of contact metamorphism, whatever they may be, as grains of quartz are often seen with portions of their masses replaced by the substance. The rock has begun its recrystallization from the isotropic material produced by solution or fusion of the original grains, but the process was arrested before the crystallization was completed. The paper concludes with some general remarks on metamorphism. The author thinks that the statement that in granite contacts no transfer of material takes place has not yet been proven true. He also thinks that more care should be taken in ascribing to dynamic metamorphism certain effects that may easily be due to the contact action of unexposed dioritic or granitic masses.

**Notes from the Adirondacks.**—The limestones, gneisses and igneous intrusives of the Northwestern Adirondack region are well described by Smyth.<sup>3</sup> The intrusions consist of granites, diorites, gabbros and diabases. The gabbro of Pitcairn varies widely in its structure and composition, from a coarse basic or a coarse, almost pure feldspathic rock to a fine grained one with the typical gabbroitic habit.

<sup>1</sup> Edited by Dr. W. S. Bailey, Colby University, Waterville, Me.

<sup>2</sup> Geological Magazine, March and April, 1895.

<sup>3</sup> Bull. Geol. Soc. Amer., Vol. 6, p. 263.

Compact hornblende is noted as an alteration product of its augite. Where in contact with the limestones the gabbro has changed these rocks into masses of green pyroxene, garnet, scapolite and sphene. A second variety of the gabbro is hypersthenic. A third variety is characterized by its large zonal feldspars composed of cores of plagioclase surrounded by microperthite, although crystals of the latter substance alone abound in some sections. The ferromagnesian components are rare as compared with the feldspars. Nearly all specimens of these rocks are schistose, and all of the schistose varieties exhibit the cataclastic structure in perfection. Analysis of the normal (I) and of the microperthitic or acid (II) gabbros yielded :

	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	FeO	MgO	CaO	K <sub>2</sub> O	Na <sub>2</sub> O	H <sub>2</sub> O	Total
I	57.00	16.01	10.30	1.62	6.20	3.53	4.35	.15 =	99.16
II	65.65	16.84	4.01	.13	2.47	5.04	5.27	.30 =	99.71

Near the contact with the limestone the gabbro is finer grained than elsewhere. Pyroxene is in larger grains than in the normal rock, but the feldspar is in smaller ones. The limestone loses its banding and is bleached to a pure white color. Between the two rocks is a fibrous zone of green pyroxene and wollastonite, together with small quantities of sphene and garnet and sometimes scapolite and feldspar. The red gneisses, common to that portion of the region studied which borders on the gabbro, are thought by the author to be largely modified portions of the intrusive rock.

The Eastern Adirondacks have been studied by Kemp.<sup>4</sup> The limestones of Port Henry consist of pure calcite, scattered through which are small scales of graphite, phlogopite and occasionally quartz grains, apatite and coccolite. This is cut by stringers of silicates that are granitic aggregates of plagioclase, quartz, hornblende and a host of other minerals. Ophicalcite masses are also disseminated through the limestones, and these are also penetrated by the silicate stringers. Merrill<sup>5</sup> has shown that the serpentine of the ophicalcite is derived from a colorless pyroxene. The schists associated with the limestones are briefly characterized by the author. At Keene Center a granulite was found on the contact of the ophicalcite with anorthosite.

**Hornblende Granite and Limestones of Orange Co., N. Y.**  
—Portions of Mts. Adam and Eve at Warwick, Orange Co., N. Y., are composed of basic hornblende granite that is in contact with the white

<sup>4</sup>Ibid, p. 241.

<sup>5</sup> Cf. AMERICAN NATURALIST, 1895, p. 1005.

limestone whose relations to the blue limestone of the same region have been so much discussed. The granite contains black hornblende, a little biotite, and so much plagioclase that some phases of it might well be called a quartzdiorite. Allanite and fluorite are also present in the rock, the former often quite abundantly. As the granite approaches the limestone it becomes more basic. Malacolite, scapolite and sphene are developed in it in such quantity, that immediately upon the contact the normal components of the granites are completely replaced. On the limestone side of the contact the rock becomes charged with silicates, the most abundant of which are hornblende, phlogopite, light green pyroxenes, sphene, spinel, chondrodite, vesuvianite, etc. The contact effects are similar in character to those between plutonic rocks and limestones elsewhere. The blue and the white limestones are regarded as the same rock, the latter variety being the metamorphosed phase.<sup>6</sup>

**An Augengneiss from the Zillerthal.**—The change of a granite porphyry into augengneiss is the subject of a recent article by Fütterer.<sup>7</sup> The rocks are from the Zillerthal in the Alps. The gneisses are crushed and shattered by dynamic forces until most of the evidences of their origin have disappeared. The original phenocrysts have been broken and have suffered trituration on their edges, while new feldspar, quartz, malacolite and other minerals have been formed in abundance. The groundmass of the gneiss is a mosaic whose structure is partially clastic through the fracture of the original components and partially crystalline through the production of new substances. The author's study is critical, and, though he treats the described rocks from no new point of view, he discusses them with great thoroughness, calling attention at the same time to the important diagnostic features of dynamically metamorphosed rocks.

**Petrographical News.**—Ransome<sup>8</sup> has discovered a new mineral, constituting an important component of a schist occurring in the Tiburon Peninsula, Marin Co., Cal. The other components of the schist are pale epidote, actinolite, glaucophane and red garnets. The new mineral, lawsonite, is orthorhombic with an axial ratio .6652 : 1 : .7385, a hardness of 8 and a density 3.084. The axial angle is  $2V = 84^\circ 6'$  for sodium light. Its symbol is  $H_4 Ca Al_2 Si_2 O_{10}$ .

<sup>6</sup> J. F. Kemp and Arthur Hollick: N. Y. Acad. Sci., VII, p. 638.

<sup>7</sup> Neues Jahrb. f. Min., etc., B.B. IX, p. 509.

<sup>8</sup> Bull. Geol. Soc. Amer., Vol. 1, p. 301.

Fuess<sup>9</sup> has perfected an attachment for the microscope which enables an observer to enclose with a diamond scratch any given spot in a thin section, so that it may be easily identified for further study.

Marsters<sup>10</sup> describes two camptonite dykes cutting white crystalline limestones near Danbyborough, Vt. They differ from the typical camptonite in being much more feldspathic than the latter rock. They moreover, contain but one generation of hornblende, corresponding to the second generation in the typical rock, and but few well developed augite phenocrysts, although this mineral is found in two generations.

A portion of Mte. S. Angelo in Lipari consists of a porous yellowish pyroxeneandesite containing grains and partially fused crystals of cordierite, red garnets and dark green spinel.<sup>11</sup>

Cole<sup>12</sup> declares that the "hullite" described by Hardman as an isotropic mineral occurring in the glassy basalts of Co. Antrim, Ireland, is in reality an altered portion of the rock's groundmass, and is no definite mineral substance.

The same author<sup>13</sup> describes the old volcanoes of Tardree in Co. Antrim as having produced rhyolitic lavas instead of trachytic ones as has generally been stated.

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## GEOLOGY AND PALEONTOLOGY.

**On the Species of Hoplophoneus.**—Four species of *Hoplophoneus* have already been described; *H. cerebralis* Cope, *H. oreodontis* Cope, *H. primaevus* Leidy and Owen, *H. occidentalis* Leidy. *Dinotomius atrox* will be shown to be a synonym of the latter species. To these may be added *H. robustus* and *H. insolens* herein described. The following key may be valuable in determining the species from a few characters.

A. Skull small, occiput nearly vertical.

a. Superior sectorial with large anterior basal cusp.

1. Pms. 2

*H. cerebralis* John Day.

b. Superior sectorial with incipient anterior basal cusp.

<sup>9</sup> Neues Jahrb. f. Min., etc., 1895, I, p. 280.

<sup>10</sup> Amer. Geol., June, 1295, p. 368.

<sup>11</sup> Bergeat: Neues Jahrb. f. Min., etc., 1895, II, p. 148.

<sup>12</sup> Belfast Nat. Field Club Proceedings, 1894-5.

<sup>13</sup> Geol. Magazine, No. 373, p. 303.